

### REMARKS

With this response, claims 1-4, 7, 11-15, 19, 39, 40, 44, 46 and 48 are amended. Claims 41, 45 and 50 are canceled. Therefore, claims 1-4, 7, 10-15, 19, 39, 40, 44 and 46-49 are pending.

### CLAIM OBJECTIONS

Claim 7 is objected to because it is dependent on a cancelled claim 6. Applicants have amended claim 7 to address the above objection.

### CLAIM REJECTIONS - 35 U.S.C. § 112

Claims 1-4, 7, 10-15, 19, 39 and 40 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Office Action on page 3 asserts the limitations “determining the availability of a processor” and “dynamically adjusting the buffer size” is not supported by the Specification. Applicants respectfully disagree with the above assertion.

Support for the limitation “determining the availability of a processor” may be found, for example, in FIG. 1B and paragraph [0017] of the specification: “physical processor 150 may schedule the multiple threads in interleaved fashion depending on **which of the logical processors 155, 160 is available.**”

Support for the limitation “dynamically adjusting the buffer size” may be found, for example, in FIG. 2 and paragraphs [0028] (“the resource manager 210 **may also change the size of buffers used by a software application**”) and [0032] (“when a current buffer level of an input buffer indicates a potential buffer overflow condition, the resource manager 210 may **increase the size of the input buffer**”) of the specification.

Therefore, Applicants respectfully request the withdrawal of this rejection for at least the reasons stated above.

### REJECTIONS UNDER 35 U.S.C. § 112

Claims 1-4, 7, 10-15, 19, 39, 40, 44, and 46-49 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office Action on pages 3-4 asserts

that it is unclear, in independent claims 1, 14 and 39, “how the coordination of the thread dispatch increases execution overlap of the threads, and that it is unclear what is the criteria in the dispatch process that increases the execution overlap of the threads.”

Applicants point out that claim 1, as amended recites: “coordinating dispatch of threads of the multi-threaded application to increase execution overlap of [thread] **activities** executing in the system **based**, at least in part, **on the availability of the buffer**.” Independent claims 14 and 19 as amended recite similar features. Thus, Applicants point out that the coordinated dispatch of threads may increase execution overlap of thread activities, and that said coordination is based on buffer availability.

The Office Action on page 4 asserts that the relationship between the “plurality of threads” and “the application” is not clear in independent claims 44 and 48. Claims 44 and 48 have been amended to recite a “multi-threaded application” and subsequently refer to the “threads of the application.” Therefore, Applicants submit that the relationship between the “threads” and the “application” is clear, and respectfully request the withdrawal of this rejection.

#### **REJECTIONS UNDER 35 U.S.C. § 103**

Claims 1, 7, 11-14, 19, and 39 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0115428 of Zaccarin et al. (hereinafter “Zaccarin”) in view of U.S. Patent Application Publication No. 2003/0137945 of Yavatkar et al. (hereinafter “Yavatkar”) and further in view of U.S. Patent Application Publication No. 2004/0216113 of Armstrong et al. (hereinafter “Armstrong”).

Applicants respectfully contend that these claims are not rendered obvious by the cited references for at least the following reason: the references, alone and in combination, fail to disclose or suggest at least one feature of the invention as recited in the amended independent claims.

Claim 1 as amended recites coordinating the dispatch of threads of a multi-threaded application to increase execution overlap of thread **activities** executing in a system **based**, at least in part, **on the availability of a buffer** associated with the application. Independent claims 14 and 39 as amended recite similar features.

The Office Action on page 6 acknowledges that Zaccarin and Yavatkar fail to disclose the above features of the independent claims. The Office Action cites paragraph [0004], [0006]

(both in the Background section) and [0011] of Armstrong to cure the defects Zaccarin and Yavatkar. Applicants respectfully disagree, and contend that Armstrong fails to cure the defects of Zaccarin and Yavatkar.

Paragraph [0004] of Armstrong discloses that execution of threads may be managed to increase effective use of a **processor** and **processor resources** (i.e., processor cores). Paragraph [0006] of Armstrong discloses that “storage and register resources may also be allocated” to increase efficiency. Thus, as Applicants have understood the reference, the Background Section of Armstrong discloses **allocating** processor resources, storage and register resources to increase efficiency, but fails to disclose the coordination of dispatch of **threads** as recited by the independent claims. Paragraph [0011] of Armstrong, included in the “Summary of the Invention” section, discloses accounting (i.e., tracking) processor time usage, but similarly fails to disclose the coordination of dispatch of threads as recited by the independent claims. Thus, as Applicants have understood the reference, Armstrong discloses allocating processing and storage resources to increase efficiency, and methods for tracking processor usage. In contrast, independent claims 1, 14 and 39 as amended recite controlling **dispatch of activities** based on available resources — i.e., coordinating dispatch of threads of a multi-threaded application to increase execution overlap of thread activities executing in a system based, at least in part, on the availability of a buffer. Therefore, Applicants contend that Armstrong fails to cure the defects of Zaccarin and Yavatkar.

No combination of Zaccarin, Yavatkar and Armstrong supports a rejection of the independent claims. Each of claims 7, 11-13 and 19 depends from one of the independent claims discussed above. Per MPEP § 2143.03, claims that depend from nonobvious independent claims are likewise nonobvious over the references.

Claims 2-4, 15 and 40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Zaccarin in view of Yavatkar in view of Armstrong as applied to claim 1 and 14 above, and further in view of U.S. Patent No. 6,662,203 of Kling et al. (hereinafter “Kling”). The defects of Zaccarin, Yavatkar and Armstrong with respect to independent claims 1 and 14 are discussed above. Kling fails to cure the defects of Armstrong, as Kling contains no disclosures directed towards coordinating dispatch of threads of a multi-threaded application to increase execution overlap of thread activities executing in a system based, at least in part, on the availability of a buffer. Thus, no combination of Zaccarin, Yavatkar, Armstrong and Kling supports a rejection of

the independent claims. Each of claims 2-4 and 14 depends from one of the independent claims discussed above. Per MPEP § 2143.03, claims that depend from nonobvious independent claims are likewise nonobvious over the references.

Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Zaccarin in view of Yavatkar in view of Armstrong as applied to claim 1 above, and further in view of U.S. Patent Application Publication No. 2002/0188884 of Jain et al. (hereinafter "Jain"). Claim 10 depends from claim 1. The defects of Zaccarin, Yavatkar and Armstrong with respect to independent claims 1 and 14 are discussed above. Jain fails to cure the defects of Armstrong, as Jain contains no disclosures directed towards coordinating dispatch of threads of a multi-threaded application to increase execution overlap of thread activities executing in a system based, at least in part, on the availability of a buffer. Thus, no combination of Zaccarin, Yavatkar, Armstrong and Jain supports a rejection of the independent claims. Per MPEP § 2143.03, claims that depend from nonobvious independent claims are likewise nonobvious over the references.

Claims 44-49 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Zaccarin in view of Yavatkar in view of Armstrong and further in view of Kling. Independent claims 40 and 48 as amended recite changing the execution readiness of a thread based, at least in part, on buffer fullness levels. Thus, independent claims 40 and 48 as amended recite features similar to coordinating execution of threads based on buffer availability. The deficiencies of Zaccarin, Yavatkar, Armstrong and Kling with respect to the above feature are discussed previously, and Applicants contend that Zaccarin, Yavatkar, Armstrong and Kling fail to disclose or suggest at least one feature of independent claims 40 and 48. Each of claims 45-47 and 49 depend from one of said independent claims. Per MPEP § 2143.03, claims that depend from nonobvious independent claims are likewise nonobvious over the references.

**CONCLUSION**

For at least the foregoing reasons, Applicants submit that the rejections have been overcome. Therefore, all pending claims are in condition for allowance, and such action is earnestly solicited. The Examiner is respectfully requested to contact the undersigned by telephone if such contact would further the examination of the present application.

Please charge any shortages and credit any overcharges to our Deposit Account number 02-2666.

Respectfully submitted,  
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I hereby certify that this correspondence is being submitted electronically via EFS Web on the date shown below.

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